

BOOK REVIEW

Histological and Histochemical Methods 4th Edition

Author: John Kiernan
Scion publishing, £40.00

The purpose of this well-established book, as stated in the preface, is 'to teach the chemical, physical and biological principles of fixation, staining and histochemistry'. Hence it aims to educate the bench histochemist to understand the principles underlying the protocols s/he is using, integrating methodology and theory. This both enables the most appropriate protocols to be chosen and for educated optimizations to be made when experiments are proving difficult.

The first chapter gives a brief introduction to the preparation of different tissue types for histological procedures. Fixation is an important starting point of most experiments but is often poorly understood or taken for granted, and the variety of processes available can be confusing. This book addresses this by providing a clear explanation of the various alternatives that can be utilized. Chapter two covers a multitude of fixation techniques for a diverse range of tissues in a comprehensive manner and the next chapter continues with the fixation theme by dealing with treatments for hard tissues and naturally progresses to processing and mounting. Chapter five gives a general introduction to dyes, including how and why they work and a full classification, and then expands upon appropriate dyes and methodologies to use in various circumstances. For many researchers, more than one dye is required and chapter six focuses on how this can be achieved, describing in some depth the use of nuclear staining, counterstaining and fluorescent staining. The next few chapters concentrate on specific compounds/cell/tissue types including blood, connective tissue, nucleic acids, organic functional groups, proteins, carbohydrates, lipids, inorganic ions and enzymes. Following these chapters, the author gives details on metal reduction and precipitation procedures, and an excellent chapter on immunohistochemistry. The book ends with a chapter termed 'miscellaneous data' which includes detailed instructions on how to make various buffers and solutions. The conventions and abbreviations section is informative without being too extensive.

Throughout the book, the author gives helpful (and highly relevant) suggestions about peer-reviewed papers

to read. The procedures given throughout this book are very easy to follow and the author clearly states the importance of experimental controls and compares different techniques and protocols. Each protocol is accompanied by a 'results' section which explains the type and distribution of staining to be expected and some notes for easy optimizations/alternatives. The only criticism that I would have of this book is a lack of micrographs showing what the 'results' should look like, so an atlas of histology will probably be required to see examples of the typical/expected staining. It is also a shame that this book does not cover imaging and photography in a little more detail or suggest further reading on these topics.

This book would serve as an excellent introduction for undergraduate and PhD students and will easily guide researchers and technicians in the comprehension of new techniques. The author emphasizes the importance of acquiring laboratory skills under the guidance of more experienced colleagues, which of course is true, but this book provides a wonderful introduction to the 'new researcher' and provides alternatives to the 'more experienced colleague'. This book is a 'must have' for any laboratory using histological techniques. It is an excellent teaching resource for anyone new to the field and gives ideas to the more experienced histologist. This book is not for the bookshelf – it should live on your laboratory bench.

Histological and Histochemical Methods was first published in 1999 but it has been extensively updated for this edition by the addition of new procedures and the extension of some of the chapters to include some 'older' but useful techniques. In general, there is more discussion about the fixation, processing and staining of microorganisms and plants. Chapter nine now contains information on *in situ* hybridization and several methods for the detection of apoptotic cells – both are a welcome addition. Previous editions of this book contained 'end of chapter exercises'; these have been removed to make way for more techniques, but the author offers the information as a PDF file that he will send by email on request.

Catrin S. Rutland
University of Nottingham
E-mail: catrin.rutland@nottingham.ac.uk